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LEARNING

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LEARNING OBJECTIVE

- 1. Learning about Learning
- 2. Learn the rules of learning



SEVEN CORE SKILLS FOR THE NEW WORLD

LITERACY



COMMUNICATION

INTERPERSONAL TEAM WORK



LITERACY

- "understanding, evaluating, using and engaging with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential" (OECD, 2012b).
- "literacy" is a broader construct than "reading," narrowly understood as a set of strategies for decoding written text





HOW DOES LANGUAGE DEVELOP

- Phonetic
- Is it different for mandarin?
- Importance of visual learning
- Dyslexia different for English versus mandarin?



NUMERACY

- "the ability to access, use, interpret and communicate mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life" (OECD, 2012b).
- "numerate behavior," which involves managing a situation or solving a problem in a real context by responding to mathematical information and content represented in multiple ways



Citizenship



SCIENCE OF COUNTING NUMBERS

- Intraparietal sulcus
- Animals to humans
- Dyscalculia
- Can you retrain ?



PROBLEM SOLVING

 problem solving in technology-rich environments is defined as "using digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks."



INSIGHT

- Insight versus deliberate
- strong activation in a brain area called the anterior cingulate cortex. widen or narrow their attention — say, when they filter out distractions to concentrate on a difficult task, like listening for a voice in a noisy room. ? insight puzzle-solving, the brain seems to widen its attention, in effect making itself more open to distraction, to weaker connections..



TEAM WORK

- the capacity to relate to others and work cooperatively.
- Core skill in the labor market





COMMUNICATION

 Effective communication is much more than being able to talk; it is also the ability to listen and understand others, to "read" and interpret body language and to know the best ways to get points across.



SELF MANAGEMENT





LIFELONG LEARNING

- Heutagogy on *learning how to learn*,
- HABIT INQUISITIVE CREATIVE SELF
 DIRECTED LEARNING
- KEY FOR WORK PLACE GROWTH





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Twenty terrible reasons for lecturing

Retention: 1st 10 mins: 70% : last 10 mins: 20% (McKeachie, 1986)

Dissontination

Paying attention: 40%

- Jak tom

(Pollio 1984)













15,000-17,000 medical journals!!!



Forgetting – What we have known since the 1860's

The time course of forgetting





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RULES FOR LEARNING

RULE #1

- The first rule of learning:
- Curiosity based exploration drives experience dependent learning. Learn by remaining curious, discover, experience explore the world.



THE SCIENCE

- Rats Nissen cross electrical grid to explore
- Monkeys Harlow play with objects and explore without reward
- Berlyne epistemic curiosity
- curiosity obeys an inverted U-shaped curve, so that we're most curious when we know a little about a subject (our curiosity has been piqued) but not too much



CURIOSITY

- The participants were presented with a selected trivia question and while they waited for the answer to pop up on the screen, they were shown a picture of a neutral, unrelated face.
- Afterwards, they performed a surprise recognition memory test for the presented faces.
- As expected, when people were highly curious to find out the answer to a question, they were better at learning that information.



DOPAMINE REWARD CURIOSITY

- question was first asked, subjects showed a substantial increase in brain activity in three separate areas: the left caudate, the prefrontal cortex and the parahippocampal gyri.
- Caudate reward
- Dopamine mechanism
- intrinsic motivation curiosity affects memory,"Gruber neuron



RULE #2

- Set the right goals in the right way for the right time period
- Set your own goals that are specific, concrete and measurable
- Set specific goals that is near term not in the distant future
- Start with goals that are realistic and achievable at the beginning
- Stretch goals and make them more difficult as skills develop



RULE #2

- SMART GOALS:
- A very popular approach to goal setting is SMART.
- The acronym is
- S=Specific
- M=Measurable
- A=Achievable
- R=Relevant
- T= Time limited.



JUST RIGHT

 Goldilocks rule, not too hard, not too easy but just right".



SCIENCE

- If then sequence and goal setting prefrontal top down control to bottom up cue based activation
- EEG and FMRI studies Golwitzer



RULE #3: ORGANIZE YOURSELF

- To meet goals and develop a sustainable learning cycle requires self-discipline and organization self-regulation.
- The first is being aware of one's thoughts and behaviour (Self-observation or self-monitoring)
- Self-judgement is to use the self-monitoring to ask how they are performing, whether they are falling behind, whether the effort that they are using is sufficient etc



ORGANIZE

 Self-reaction is when they adjust their actions based on self-judgement. So for example, if the goal is not realistic then revising their goal.





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RULE #4: REPETITION RULES AND PRACTICE MAKES PERFECT



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RULE #5: RECALL IS BETTER THAN READING


In contrast to restudy, initial testing that contributed to future memory success was associated with engagement of several regions including the anterior hippocampus, lateral temporal cortices, and medial prefrontalcortex (PFC). Additionally, testing enhanced hippocampal connectivity with ventro-lateral PFC and midline regions. These findings indicate that the testing effect may be contingent on processes that are typically thought to support memory success at encoding

Cabeza 2013 Neuropsycholgia

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RULE #6: IT IS NOT JUST SIMPLE REPETITION BUT PLANNED THOUGHTFUL AND DELIBERATE PRACTICE

Practice more of what you know less well or have trouble with

If the learning can be simulated use that approach as much as possible

RULE # 7: SPACE YOUR LEARNING

- If you want to remember for just a short while cram. If you want to remember for a long time space the interval between learning sessions.
- Longer intervals are better for long term retention



 fMRI study, participants were scanned while intentionally memorizing 120 novel faces, half under the massed learning condition and the other half under the spaced learning. Successful face memory encoding associated with stronger activation in the bilateral fusiform gyrus, which showed a significant repetition suppression effect modulated by subsequent memory status and spaced learning. Spaced learning significantly reduced repetition suppression. Gui Xue, Leilei Mei and Qi Dong 2011



RULE #9: INTERLEAVING

- Switch topics when learning
- Switch problems when learning
- Switch all the time



RULE#10: TEST YOURSELF

 Testing yourself keeps you engaged that in turn means more repetition. But the best test are those that make you use the information and extend yourself. Think about where else what you learnt could apply.





RULE #12: LEARNING WITH CONCEPTS



RULE #14: LEARN WITH FRIENDS: PEER LEARNING





New Instructional Strategy:

TeamLEAD (Learn, Engage, Apply, Develop)



Voice Annotated Presentations

- Editable, "Update-able"
- Different Versions possible
- Review of lectures for Quality
 Open Community (Wikipedia)
- User:
 - ability to search for specific topic
 - "Just in time" education



Scenario #2

Random access to slides of interest







Prototype Annotated PPT Database





Username Password

Register

ΨŲ. 1 Log in

Forgot Password

hose with a mismatch in delivery-learning rates, we offer	
Annotated Presentations (VAPs), a Browse and Learn resource	
r list of voice annotated slides of a presentation.	

Sharing medical knowledge with the world: Curiosity @ Work

HOME

"This website is best view with Google Chrome browser. To download Google Chrome browser, please click on this link"

Browse and Learn	Search
⊟-Modules	Search results
由 Learning in Ten	
[⊞] ·MCI	
🕀 About TeamLEAD	
D'About Duke-NUS	
Principles of Clinical Research	
D About VAP Technology	
🕀 Great Learning Resources	
Partners	
臣 MD	
E: Clinical Concepts	
E:Residency Training	
1 Assessment	
H Mood and Behavior	
Duantitative Medicine Forum	
⊞ Biostatistics Forum	
E Residency Research Program	







Algebra

Conceptual videos and worked examples from basic algebra through algebra 2. Includes videos from the former algebra worked examples playlists.

Community Questions



Introduction to algebra

54 ± 15

Videos exploring why algebra was developed and how it helps us explain our world.



Linear equations

89 * 19





Linear inequalities

Exploring a world where both sides aren't equal anymore!



27 🛨 5

Use the power of algebra to understand and interpret points and lines (something we typically do in geometry). This will include slope and the equation of a line.

Graphing and analyzing linear functions

94 ± 35



Systems of equations and inequalities

Solving a system of equations or inequalities in two variables by elimination, substitution, and graphing.



Multiplying and factoring expressions

173 **1**2

This topic will add a ton of tools to your algebraic toolbox. You'll be able to multiply any expression and learn to factor a bunch a well. This will allow you to solve a broad array of problems in algebra.

Quadratics functions and equations

47 ± 13

In this topic, we'll analyze, graph and solve quadratic equations.









TRADITIONAL

Wishful Thinking:





Treaminiona DR eality:





TeamLEAD:





TeamLEAD:





TeamLEAD:





New Instructional Strategy:

TeamLEAD (Learn, Engage, Apply, Develop)





Individual Readiness Assessment

-



Group Readiness Assessment

IF/AT forms

CLADAY PROJECT



Application Phase

SCHLIEVE Christopher Ross

POH Shu

 \times

Sara

SOH Xin Xuan

Shoila

Bringing Attention Back Into Your Life



Pilot Study: Protocol





BCI-based intervention





Pilot Study Results

• Mean change in ADHD Rating Scale IV (ARS-IV) Inattentive (IA) raw scores Week 0-10 as rated by parents





Follow-on Randomization Clinical Trial

- Similar design to the Pilot Study
- Randomization Clinical Trial (RCT) of 140 unmedicated ADHD boys and girls aged 7-12: intervention vs control
- Primary outcome: ADHD Rating Scale Inattentive Score
- Differences now:
 - Randomization (stratified)
 - Behavior management protocol
 - IQ, neuro-cognitive assessment
 - Longitudinal follow-up



BCI elderly memory





The Future: Learning Organization




Bite-sized, 10 minute audio visual vignettes / modules delivering variety of clinical topics

CHANGE AHEAD